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Evaluating DHEC's Web site

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## **Problem statement**

I chose to evaluate the usability of the South Carolina Department of Health and Environmental Control's (DHEC) Web site, <http://www.scdhec.gov>, as my Certified Public Manager's project. "What is Usability? Usability is a quality attribute relating to how easy something is to use. More specifically it refers to how quickly people can learn to use something, how efficient they are while using it, how memorable it is, how error-prone it is, and how much users like using it." (New Riders, Prioritizing Web Usability, p.xvi) The DHEC Web site is a vital communication tool that the agency uses to deliver information to the masses. It is imperative that the public be able to locate and understand the public health and environmental information they seek from the Web site. The DHEC Web site was launched in 1996 and only limited, informal usability testing has been completed to date.

This project aligns with the agency's customer service value, objective 1-E-1 and objective 5-B-4 of DHEC's Strategic Plan 2005-2010. The agency's customer service value, "We are committed to meeting or exceeding customers' identified needs and expectations with quality service." (Department of Health and Environmental Control [DHEC], Strategic Plan 2005-2010, p.6), not only applies to traditional, one-on-one customer service, but also in providing the same quality of service via the Web. DHEC's objective 1-E-1, "Increase public awareness through health and environmental education, publications, presentations and the DHEC Web site." (DHEC, Strategic Plan 2005-2010, p.9), and objective 5-B-4, "Improve and increase public health and environmental information available to the public through the agency Web site." (DHEC, Strategic Plan

2005-2010, p.18), demonstrates the agency's commitment to use the Web as a reliable and thorough source of information for the public. Performing usability testing will provide some measure to help determine if we are achieving our values and objectives in regards to the Web site or if we have areas that still need improvement.

The usability testing conducted for this project provided insights such as how difficult it is for people to find certain types of information on DHEC's Web site and that people viewing the same information can draw varying conclusions. The testing did have certain limitations. Ideally, testing would have occurred in person. The testing conductor would give the participant a series of questions. The participant would use the DHEC Web site to find the answers. The conductor would ask the participant to talk aloud as they were working through the process. A panel of reviewers would document the participant's methods for finding information and recording the audible remarks.

Due to the time constraints of this project and staff availability, I decided to deploy the usability testing via a Web-based survey. In doing so, you do lose some key information related to search methodology, individual's Web preferences (navigation, site design, etc.) and the thought process for interpreting information to arrive at conclusions or answers to the questions. However, conducting any usability testing is a good litmus test to reveal if a usability problem is existent or non-existent. Lastly, the main reference book for this project contains general guidelines for improving the usability of most sites. These guidelines are based on data from years of numerous usability testings conducted throughout the U.S. and other countries. "Although there are exceptions—which is why

we advise that you test your own site—these guidelines apply about 90% of the time, and the vast majority of Web sites would be better if they complied with them.” (New Riders, *Prioritizing Web Usability*, p.4)

### **Data collection**

The agency receives many e-mail inquiries from the public. In January 2006, the InfoTrack tracking system was developed. This system tracks e-mail inquiries that are submitted via the “Contact Us” portion of DHEC’s Web site. To date, this system has tracked more than 12,278 e-mail inquiries. (The agency receives additional e-mail inquiries, but they are not all routed through the InfoTrack system.) The public submits an inquiry when they seek information that was either not available on the Web site or when they could not quickly and easily locate the information themselves. A comparison of the most requested information to what is currently available for these topics would prove helpful. This could pinpoint where information gaps exist and identify which information is not easy to locate.

For this project, I collected mostly narrative data. I used the InfoTrack’s database (archives/data on public e-mail inquiries) to see which information topics were most often requested by the public. I used the results from this initial query to create a 10-question Web-based survey for newly hired DHEC staff to complete. These newly hired employees had been with the agency for three months or less and they were not re-hired TERI or retired employees. This survey group is most like the public since they have limited agency knowledge. The goal for collecting this data was to see if the survey group

could successfully find and report the answers to the 10 questions, which were all available on DHEC's Web site. In addition to the 10 questions, there was an opportunity for the survey group to provide general comments about the Web site. These comments would most likely provide layout and navigation recommendations for possible improvement.

I created another Web-based survey for the Web contacts within the deputy areas and central office programs. This three-question survey was meant to collect data on how areas use customer feedback to develop new or update existing Web content, to document the process for approving new and updated Web content, and to document how the area's Web content is reviewed to ensure accuracy. Since DHEC has a de-centralized Web development structure it is important to know how the various areas are managing the Web content for public consumption.

At my direction, the agency's Webmaster sent an e-mail to the various Web developers to assess what percentage of their time is spent on internal/external Web development, whether or not this job duty is reflected in their Employee Performance and Development Plan (EPDP), and to determine what back-up process was in place for Web development. The purpose of this data collection is to track the flow of agency Web development in our de-centralized structure.

Lastly, I collected information from several state agencies that are hybrids, meaning they have a public health and joint environmental focus. These agencies are most like DHEC

in terms of goals, function and service. I was trying to determine if their Web development structure was centralized or de-centralized, what the Web developers or team member's responsibilities and roles were, the size of the agency, and to seek documentation of their Web policies and procedures. Gaining this information could help DHEC assess whether its current Web development structure is appropriate, could help DHEC plan for future Web staffing needs and could help in determining whether or not to add to or revise our Web policies and procedures.

### **Data analysis**

Information on vital records (specifically birth and death certificates), septic tanks, immunizations, mold, controlled substance registrations and health facilities complaints are the most requested topical information. Thirty-five of 154 newly hired employees completed the 10-question, Web-based usability survey for a return rate of 22.7%. Sixty-two percent of participants found the correct answers to the questions. Twenty-five percent of participants reported incorrect answers to the questions. Thirteen percent of participants were unable to find or did not report an answer to the questions. (See Appendix A)

It is somewhat difficult to determine the exact reasons for the incorrect answers or for those answers that staff could not locate. Again, this is because the way the usability testing was deployed—via Web-based survey. As a result, the participant's internal thought processes and search process steps were not captured. Ideally, testing would

occur in person. Given the time constraints and available resources to complete this project, the Web-based survey was the best option for gathering some base-line data.

However, there are obvious layout or information grouping (“chunking”) issues that cause the answers to be somewhat difficult to locate. Some answers are buried within paragraphs of text that cannot be easily scanned; some answers are not located on a single topic page, but rather on subsequent pages that people may not think to search; some answers are found in PDF files instead of html pages which requires additional effort on the customer’s part to locate; and some answers are simply not clear.

Most newly hired employees used the A to Z subject listing to find most of the answers, followed by the search engine. Most comments were positive on both searching mechanisms. There were recommendations to make the A to Z listing more prominent on each Web page and to add additional topics to the listing that the public would recognize and seek out. There were some complaints that the search engine did not provide helpful information or that the document links contained confusing titles so it was hard to know if the document actually contained the information requested. (See Appendix B)

In general, there are national trends for how people find information on Web sites and it varies only slightly from regions of the country. As a result, some layout and navigation recommendations have been developed for companies to use as a guideline to make their sites more usable by their customers. (New Riders, *Prioritizing Web Usability*, p.4) While some of these recommendations have been incorporated into DHEC’s Web standards and



guidelines, a comparison needs to be done to see what low hanging fruit still exists. We need to incorporate as many of these recommendations as possible.

The deputy areas and central office program Web contacts were polled about their methods of Web content management. Twelve of 17 responded for a return rate of 70%. The first question asked, "What methods are used to obtain customer input during the development of new or updated Internet Web content?" Sixty-six percent of staff is using some form of customer feedback to shape Web content, seventeen percent are not using customer feedback and the narrative response is unclear for the remaining seventeen percent of responses. (See Appendix C)

The second question asked, "How is Internet Web content (new and updated) approved?" All of the respondents reported that there was some type of approval process in place. This approval was either at the program level, management level, through multi-program levels or team approvals.

The third question asked, "How is Internet Web content reviewed to ensure the most accurate and up-to-date information is available to the public?" All of the respondents reported that there was some type of review process in place. Most review is handled at the program level. Programs work with the agency's Webmaster, their management and other team members to determine which content needs to be updated. A couple of programs have a scheduled review process such as once a year or quarterly. Most others update as needed or as the result of broken links and discovered out-dated information.

It is not surprising that the deputy areas and their various programs are managing their Web content in their own unique ways. The agency does not have a policy or procedures in place to address the importance of managing Web content. As a result, it would be difficult to implement an agency-wide standardized system of Web content management. While DHEC is not hiding its Web standards and guidelines, typically the Web developers not the program staff responsible for content review these procedures. It would probably be best to target the program contact staff in an effort to improve DHEC's Web content management. An on-line resource could be developed and promoted to staff.

There are 22 Web developers throughout the agency. Sixteen of twenty-two Web developers responded to the Webmaster's e-mail concerning their Web development activities for a return rate of 72%. The first question asked, "What percentage of time is spent on internal and/or external Web development?" Twenty-five percent of Web developers spend between five and 10% of their time on Web development. Thirteen percent spend 90% of their time on Web development. An additional thirteen percent spend less than one percent of their total time on Web development. The remaining forty-nine percent is a total of various percentages of time ranging from 15 to 80%. (See Appendix D)

The second question asked, "Is the time spent on Web development reflected in your EPDP?" Sixty-two percent of Web developers report that their Web duties are reflected

on their EPDPs. Twenty-five percent of Web developers say that their Web duties are not reflected on their EPDPs. Moreover, thirteen percent of Web developers polled is hourly employees so they do not have an EPDP for any of their job duties. (See Appendix D)

The third question asked, "What is the backup process for publishing Web content in your absence?" Eighty-one percent of Web developers report that there is a backup process in place, while nineteen percent report there is no backup process. Sixty-nine percent report that their backup is another program or deputy area contact, while thirty-one percent report the agency's Webmaster as their backup. (See Appendix D)

Because the agency has a de-centralized Web structure, the deputy area and program area Web developers are not accountable to the agency's Webmaster. While there are Internet standards and guidelines in place, it is difficult to impose deadlines for completing certain tasks and there is no effective process in place for resolving issues. A teamwork approach that involves many reminders and follow-ups on the Webmaster's part to the Web developers is the only process in place. Lastly, the Web developers' supervisors do not solicit the agency's Webmaster input in regards to their Web developer's performance.

There have been several attempts to reduce the number of Web developers throughout the agency. At this point, there is not sufficient managerial support to propose another Web developer reduction or to support a centralized Web structure. However, it is an issue that twenty-five percent of Web developers are reporting that their Web development job duty is not reflected in their EPDP. It is difficult for an employee to recognize the importance

of a job duty that simply does not exist nor has any bearing on their annual performance. Managerial support is needed to correct this issue. The agency's Webmaster stands ready to serve the Web developers in a backup role. This should be reiterated to the Web developers that are reporting no backup process is in place.

I received input from the Colorado Department of Public Health and Environment, the Hawaii State Department of Health, the North Dakota Department of Health and the Kansas Department of Health and Environment. These agencies are most like DHEC because they focus on health and environmental issues. There are five other states that have a combined health and environmental agency, but four of five agencies responded for a return rate of 80%.

The first question asked was, "Is there a centralized Web department/team or does your agency have a de-centralized system consisting of Web developers throughout the agency?" Three agencies reported that they have a de-centralized Web structure with developers throughout their agencies. One agency has a centralized Web structure with a two-member Web team. Most have a centralized review process in place that review content and some that review technical set-up in addition to content. (See Appendix E)

The second question asked, "If there is a Web department/team, can you tell me about the members' roles and responsibilities?" The responses to this question are very different. Colorado has the most structured system with 15 developers and an agency Webmaster. The developers are responsible for publishing program content and meeting department,

state and federal laws and guidelines for Web content. Hawaii lost its IT Webmaster a year ago and to date has not been able to fill the position. They have an IT staff rotation in place until the position is filled to maintain their site. They mention that determining Web responsibilities is an on-going challenge. North Dakota's IT staff in each section makes updates to existing pages or creates new content pages. The Communications Department has three public information staff that review new pages. Kansas has one programmer that does all the coding, structure and special applications as requested; one individual that reviews submitted content, layouts, special requests before posting and also creates content as needed.

The third question asked, "Can you send me a copy of your Web policies and procedures?" Three of four states provided this documentation for a return rate of 75%. Colorado sent their Internet and Intranet Standards in addition to their IT Strategic Plan. Hawaii sent their Guide to Standards and Style for their Web site Publication Standards. North Dakota submitted a two-page Web site Design Policy. Kansas does not have formal set of policies and procedures.

The fourth question asked, "How many employees does your agency employee?" Colorado employees approximately 1,200 employees, Hawaii employees over 3,100 employees and Kansas reported 1,000 employees statewide. North Dakota did not provide a response.

The goal in collecting this data from other state agencies was to be able to compare what is working for other states and to see how DHEC may be able to incorporate some of their processes into our Web development efforts.

## **Recommendations**

The first recommendation identified to help improve DHEC's Web site usability is to incorporate as many of the general layout and navigation recommendations as possible. The Webmaster and I need to compare the national listing to DHEC's Internet Standards and Guidelines. Adding to the standards and guidelines and adjusting the Internet template accordingly could be completed by March 3, 2008. We can also make the A to Z listing more prominent in a revised design. There will not be a hard cost associated with this recommendation, only administrative time to complete the task. The Webmaster or Communication Resources director will need to communicate the additions to the standards and guidelines to the Web developers and program contact staff.

The second recommendation would be to communicate the findings of this project to program content staff. Gaining their support for improvement is crucial. An on-line resource for Web content management should be developed so staff will have an easy-to-use reference for making Web content as user-friendly as possible. The on-line resource can be developed by April 4, 2008. Again, there will not be a hard cost associated with this solution. A potential obstacle would be resistance from programs, not necessarily the program content staff. It will be crucial to listen to programs' concerns and develop

solutions so that managing Web content can be easily incorporated into their job responsibilities without creating undo burden.

A third recommendation would be to garner additional support from the various InfoTrack program contacts. The InfoTrack system was designed to identify where information gaps exist on the Web. If a program is responding to the same types of inquiries over and over, more than likely the information needs to be placed on the Web for consumption. If the information is already on the Web, the information's location or clarity should be evaluated to determine necessary improvements. While the system has been explained several times to upper management, I am not sure that the overarching goal to publish additional Web content is trickling down to those who are actually responding to the requests. I can create a simple PowerPoint presentation on the InfoTrack system that managers can use to train staff. This could be completed by April 30, 2008 and posted to Communication Resources Intranet page. I can e-mail a link to management staff on April 30.

I would like to recommend a centralized Web structure, but I am not sure that managerial support exists for this or that the resources are available to make this type of organizational change. If the agency will continue with the de-centralized Web structure, I would recommend two changes. First, that the Web development supervisors need to add the Web development job duty to their staff's EPDPs. This recommendation would probably need to be requested at the Executive Management level. I can send this recommendation to my supervisor, an Executive Management Team member, by May 1,

2008. However, I am not sure that my supervisor will be able to enforce a timeframe for completing this task. I am sure she will make a recommendation and hopefully, it will occur. Secondly, I would like to recommend that the supervisors' solicit the agency Webmaster's input for their Web developers performance evaluation. This recommendation can only occur if the EPDP is amended and if upper management supports this accountability measure.

Lastly, I'd recommend that the agency Webmaster and I thoroughly examine the policy and procedures from the other states to see where we can modify or add to DHEC's current standards and guidelines. This step could be completed by May 30, 2008.

### **Evaluation**

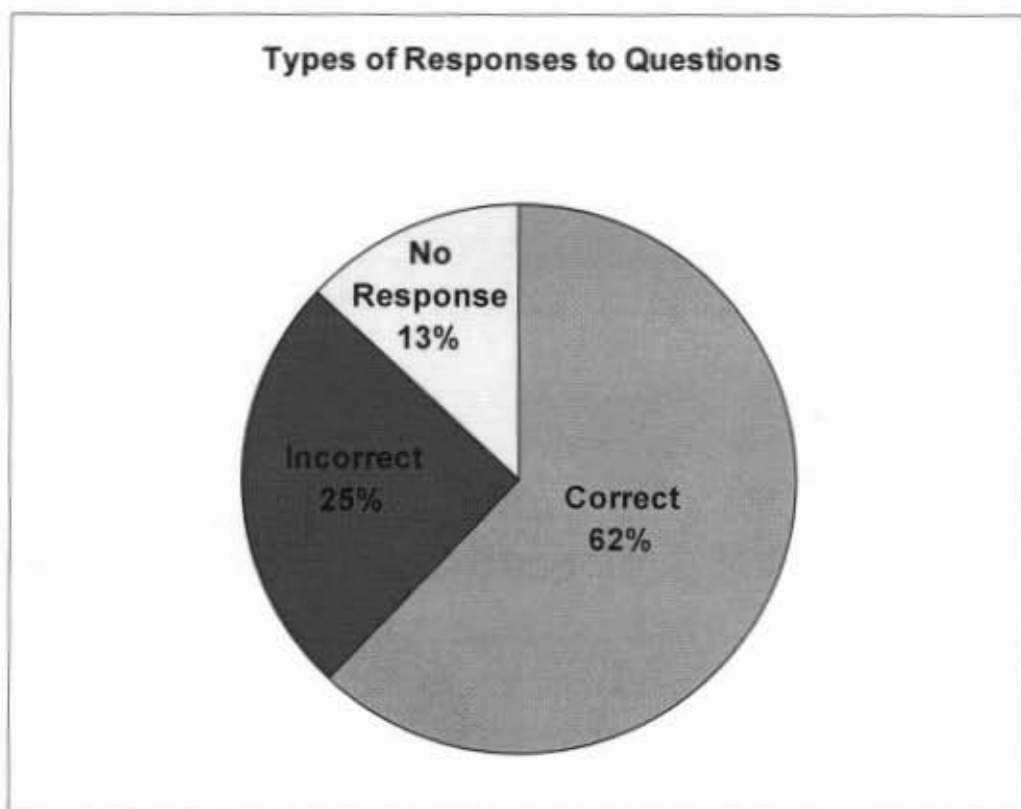
It would probably take at least one year from May 30, 2008, to see some benefits of implementing these recommendations. Gathering data from the InfoTrack system to see if the frequency of inquiries is declining would be one measure. Another web-based survey to newly hired employees could also gather data to see if the percentage of correct answers is higher than from the previous year.

In conclusion, DHEC's Web site fairs okay in terms of usability. However, several areas of improvement are needed. These areas are providing additional information on the Web that the public seeks; making sure the information can be found easily; making sure the information is clear and not confusing; making sure the information is accurate and up-to-date; and making sure the layout and navigation are as user-friendly as possible.



We need to continue engaging the public or our customers when considering updating or adding new content to the site. As recommendations are implemented to strengthen the agency's Web site and structure, we will begin to provide the same high level of customer service via the Web that our customers expect from the agency.

## Appendix A



## Appendix B

DHECnet: DHEC Internet Web Site Usability Input Tool Results

**DHECnet** [Home](#) [Policies/Procedures](#) [About Us](#) [Areas](#) [Technologies](#) [Reports/Forms](#) [Contact Us](#)

- Web Development Resources Home
- Web Development Policy (pdf)
- Review Procedure for Internet Web Sites
- Review Request Form for Internet Web Sites
- Standards & Guidelines
- Web Accessibility Resources
- E-mail Obfuscating Tool
- WebTrends Intranet Statistics (userid: anonymous)
- WebTrends Internet Statistics (userid: anonymous)

### Web Development Resources

#### DHEC Internet Web Site Usability Input Tool Results

List | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11

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#### 11. Please provide any general comments or concerns about DHEC's Internet Web site.

The "A to Z subject listing" helps a lot. However, more detailed info. in each section may not be noticeable to consumers.

Type under "Required Information for a Birth Record" "Area code and daytime telephone number of the person requesting the " requesting what? also I don't like how the search engine works. When I type in "vaccinations", the broad category I'm looking for doesn't show up. Our search engine just shows random documents and then shows the same ones over and over. Like "DHEC News" and about how rabies vaccinations are, that's the first one that shows up for vaccinations.

It took me a while to find all of the information requested in this survey, however given the amount of information contained within the website; DHEC does a very good job of organizing and presenting the information.

While the search feature provides accurate results quickly, some of the document titles do not adequately reflect the document's contents as it relates to customer needs. For example, some of the documents returned in searches are titled simply with numbers in what would appear to be a document or form number, without any comprehensible explanation in the title to provide clarity. The excerpt below can provide additional clues, but since key words and phrases are selected out of context, the excerpt does not always provide a good indication that the document will be useful or lead to the intended information.

A little tedious to navigate through, but not terribly difficult.

It's a little difficult to find what I need without knowing the proper department in the first place. Search gives too much information. Maybe suggest a A-Z search or a sublist under each department

The ASP.NET technology is much better than this poor asp web site.

none

The septic information was difficult to find & I've had problems navigating the site in the past. It is not the most difficult site I've dealt with, though.

Some information not readily available. Link to site map should be on every page.

Much harder to navigate through when I have specific questions that I need answers for. It would be very hard for someone with limited computer knowledge to use.

Confusing and does not fully answer questions.

The a to z index is the easiest way to navigate the website. I would just suggest adding more links to this page.

The A-Z subject listing page is very useful, but I did not learn about it until about question 7. The link to the subject listing page should be made more eye-catching. Also, I think that the website does not give the answer to #3. If the answer is there, it needs to be put somewhere it can be seen.

none

The short time I have been here it seems to have alot of good information

To find almost all the answers I had to use the search feature, but once I searched, what I wanted usually was the first or second choice.

[http://webdev/co/cr/webmasters/usability\\_survey\\_results\\_11.asp](http://webdev/co/cr/webmasters/usability_survey_results_11.asp) (1 of 2) [12/3/2007 2:27:23 PM]

## Appendix B

DHECnet: DHEC Internet Web Site Usability Input Tool Results

The A-Z listing works fairly well, however a lot of people that use Goggle and Yahoo search engines may try our search box first. An improvement in this area for more specific finds may be useful.

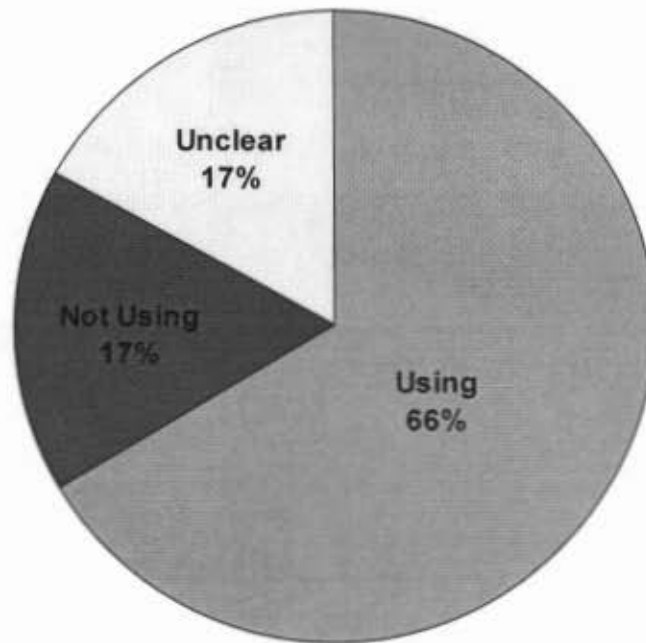
The "Search" tool does not find useful information much of the time.

Time to navigate the website and some of the information was difficult to locate (i.e)cost to evaluate sites for septic tank and yellow fever vaccine.

The A-Z subject listing was the quintessential tool for finding most of these questions. The easier it is for a visitor to see this the easier they can find what they're looking for.

## Appendix C

**Percentage of Customer Feedback Used  
to Shape Web Content**

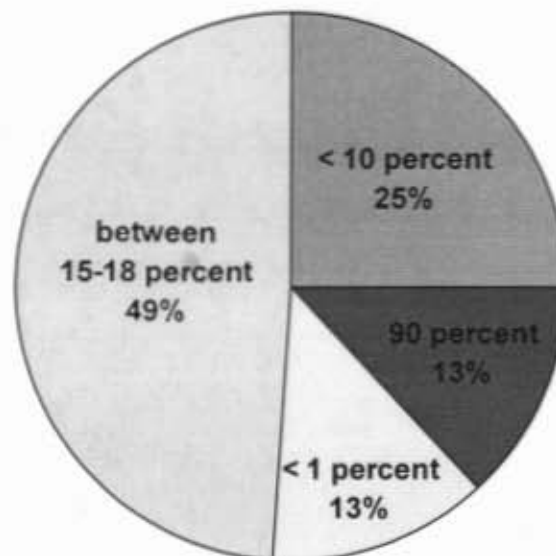


## Appendix D

### What Percentage of Time is spent on internal and/or external Web development?

Staff	Response	Area
Kris Black	10%	CO
Dakin MacPhail	95%	CO
Robert Johnson	10%	HR
Carol Roberts	50%	BOW
Connie Turner	5-10%	EQC Lab
Molly Harner	90%	EQC Admin
Joshua Boulware	very limited less than 1%	OCRM
Terry Hogan	80%	BLWM
Dan Burger	5-10%	OCRM
Brian Payne	70%	BAQ
Robb Betterton	60%	HS
Jared Shoultz	35%	COS
Jeannie Eidson	less than 1%	BOW
Elzbieta Covington	15%	BLWM
Todd Barrett	40%	BAQ
Donna Lee Ragdale	90%	EQC Admin

### Percentage of Developer Time Spent on Web Development

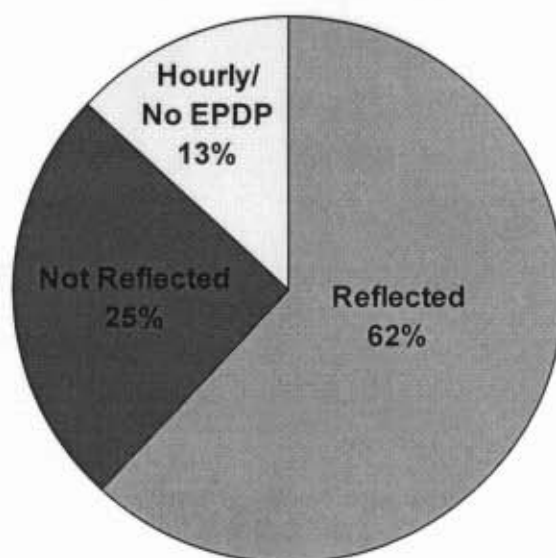


## Appendix D

### Is the time spent on Web development reflected in your EPDP?

Staff	Response	Area
Kris Black	Y	CO
Dakin MacPhail	Y	CO
Robert Johnson	Y	HR
Carol Roberts	Y	BOW
Connie Turner	Y	EQC Lab
Molly Harner	Hourly employee No EPDP	EQC Admin
Joshua Boulware	N	OCRM
Terry Hogan	Y	BLWM
Dan Burger	Y	OCRM
Brian Payne	Y; only 40%/70%	BAQ
Robb Betterton	N	HS
Jared Shultz	N	COS
Jeannie Eidson	N	BOW
Elzbieta Covington	Y	BLWM
Todd Barrett	Y	BAQ
Donna Lee Ragdale	Hourly employee No EPDP	EQC Admin

### Web Development Time Reflected in EPDPs



## Appendix D

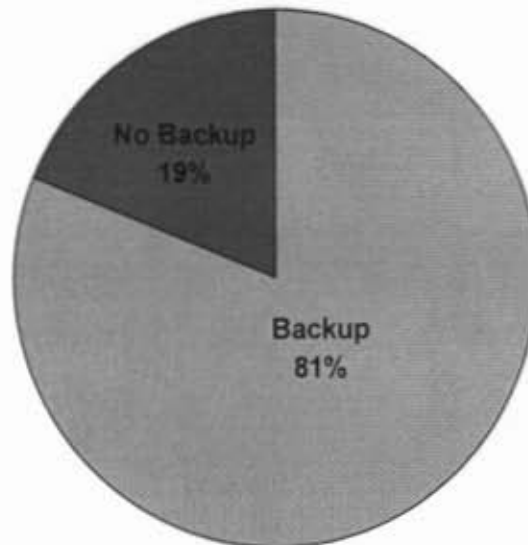
### What is the backup process for publishing Web content in your absence?

Staff	Backup Y or N	Contact	Area
Kris Black	Y	Robb	CO
Dakin MacPhail	Y	Kris and Robb	CO
Robert Johnson	Y	Larry Von Wessinger or Dakin	HR
Carol Roberts	Y	Dakin or EQC Admin contact	BOW
Connie Turner	Y	Dakin	EQC Lab
Molly Harner	Y	Donna or Stephen Robinson	EQC Admin
Joshua Boulware	N		OCRM
Terry Hogan	Y	Sabra Lindler or Carols Arias	BLWM
Dan Burger	Y		OCRM
Brian Payne	Y	John Daraban or Todd Barrett	BAQ
Robb Betterton	Y		HS
Jared Shoultz	N		COS
Jeannie Eidson	N		BOW
Elzbieta Covington	Y		BLWM
Todd Barrett	Y	John Daraban or Brian Payne	BAQ
Donna Lee Ragdale	Y	Molly Harner or Stephen Robinson	EQC Admin

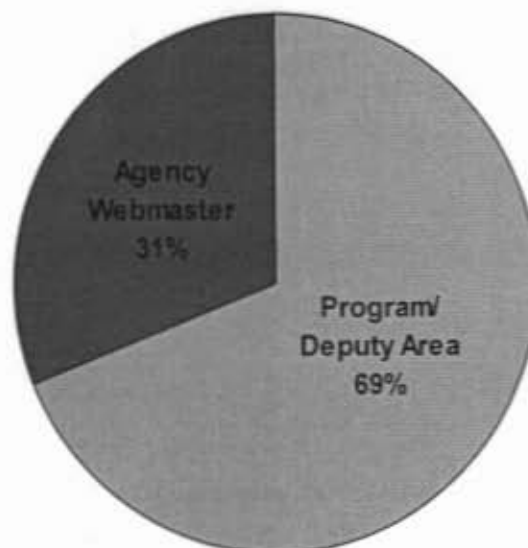


## Appendix D

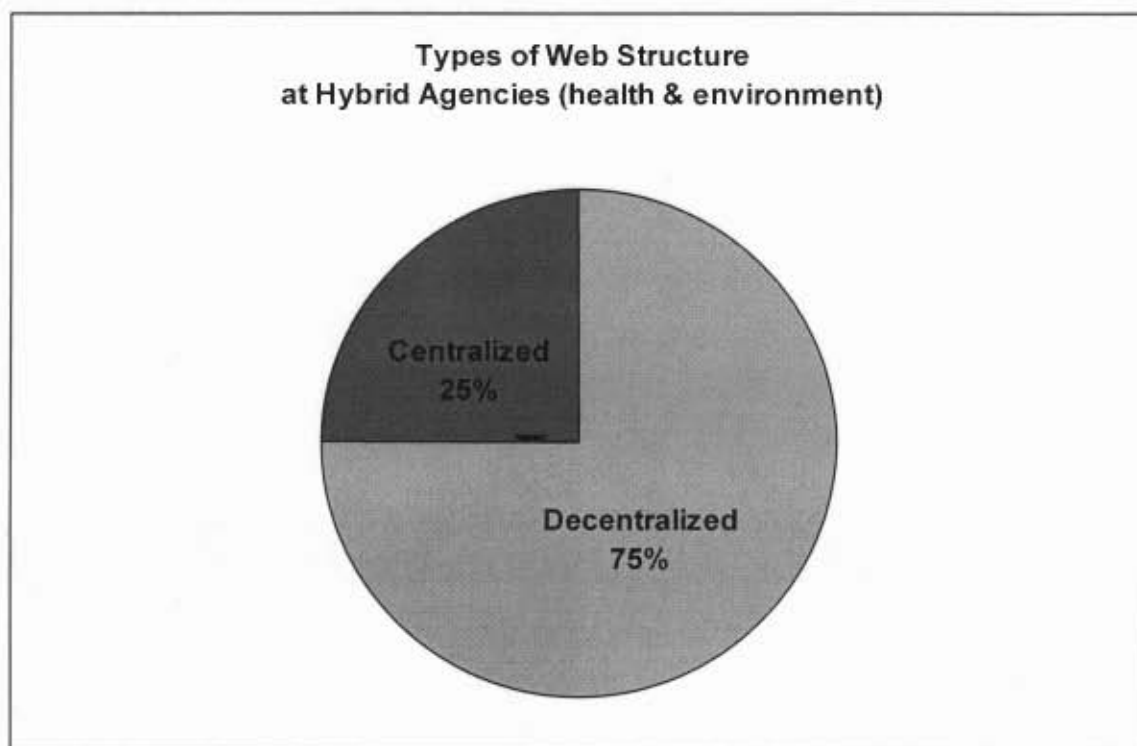
**Web Development Backup Process**



**Web Development Backup Type**



## Appendix E



### **References**

Nielsen, Jakob and Loranger, Hoa. Prioritizing Web Usability. California: New Riders, 2006

S.C. Department of Health and Environmental Control. Strategic Plan 2005-2010. South Carolina: DHEC, 2006